

CLAIMS

What is claimed is:

- 5 1. A grinding machine, comprising:
 - a. a surface following frame to be moved along a surface to be ground;
 - b. an hydraulic grinding assembly mounted to said frame;
 - c. a mechanism causing said grinding assembly to be raised and lowered relative to said
frame in a predetermined pattern.
- 10 2. The grinding machine of claim 1 wherein said predetermined pattern is actuated by the
advancement of said frame.
3. The grinding machine of claim 2, wherein said grinding assembly is pivotally mounted to
15 said frame.
4. The grinding machine of claim 2, wherein said mechanism for raising and lowering said
grinding assembly comprises at least one vertical slide.
- 20 5. The grinding machine of claim 2, wherein said mechanism for raising and lowering said
grinding assembly comprises a pivot arm.

6. The grinding machine of claim 2, comprising a displacement wheel linked to said mechanism, wherein rotation of said displacement wheel actuates said raising and lowering mechanism.

5 7. The grinding machine of claim 6, wherein said raising and lowering mechanism is hydraulically assisted.

8. The grinding machine of claim 7, comprising an hydraulic control valve mounted on said grinding assembly.

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9. The grinding machine of claim 6, wherein said displacement wheel is mounted forward of said frame.

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10. The grinding machine of claim 6, wherein said displacement wheel supports said frame over the surface to be ground.

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11. The grinding machine of claim 7, comprising a bell crank pivotally mounted to said trolley and an activation link between said bell crank and said displacement wheel, wherein said link is oriented to advance and retract in association with rotation of said displacement wheel, wherein advancement and retraction of said activation link causes said bell crank to actuate said raising and lowering mechanism.

12. The grinding machine of claim 11, wherein said activation link is eccentrically mounted to said gauge wheel.
13. The grinding machine of claim 7, wherein said raising and lowering mechanism comprises at least one hydraulic piston mounted between said frame and said grinding assembly.
14. The grinding machine of claim 13, comprising an hydraulic valve actuated by said gauge wheel to extend and retract said at least one hydraulic piston.
15. The grinding machine of claim 2, wherein said frame comprises ground support elements.
16. The grinding machine of claim 15, wherein said ground support elements are selected from a group consisting of wheels, rollers and skids.
17. The grinding machine of claim 2, wherein said frame is mounted to a host machine.
18. A grinding machine, comprising:
- a. a surface following portion to be moved at a uniform height along a surface to be ground;
 - b. an hydraulic grinding assembly mounted to said surface following portion;
 - c. a gauge wheel associated with said surface following portion and in contact with the surface to be ground;

d. a mechanism to hydraulically vertically raise and lower said grinding assembly relative to said surface following portion to grind depressions in the surface in correspondence with the rotation of said gauge wheel.

5 19. The grinding machine of claim 18, comprising a rotating pattern wheel associated with said surface following portion and driven by said gauge wheel.

20. The grinding machine of claim 19, wherein said pattern wheel is driven by a sprocket chain driven by said gauge wheel.

10 21. The grinding machine of claim 19, comprising a bell crank mounted to said surface following portion, with one bell crank arm linked to said pattern wheel, wherein rotation of said pattern wheel causes said bell crank to rotate, and wherein rotation of said bell crank actuates said raising and lowering mechanism.

15 22. The grinding machine of claim 21, wherein said one bell crank arm is linked to said pattern wheel via an actuation rod.

20 23. The grinding machine of claim 21, wherein said bell crank is biased to a position where said grinding assembly is raised, and wherein said pattern wheel is linked to said bell crank to periodically urge said bell crank to a position where said grinding assembly is lowered.

24. The grinding machine of claim 22, wherein a second bell crank arm is coupled to an hydraulic valve which operates an hydraulic cylinder to raise and lower said grinding assembly.

5 25. The grinding machine of claim 24, wherein the arms of said bell crank span an angle of approximately 85 degrees.

26. The grinding machine of claim 18, wherein said gauge wheel is spring biased to contact the ground.

10 27. A method of grinding a series of depressions in a surface, comprising the steps of:

- a. providing an hydraulic grinding assembly mounted on a surface mounting portion;
- b. advancing a gauge wheel along the surface to be ground; and,
- c. raising and lowering said grinding assembly relative to said surface mounting portion in

15 correspondence with the rotation of the gauge wheel.

28. The method of claim 27, comprising hydraulically raising and lowering said grinding assembly.

20 29. The method of claim 19, comprising driving a pattern wheel offset from said gauge wheel.

30. The method of claim 19, comprising milling depressions by raising and lowering said grinding assembly.

